



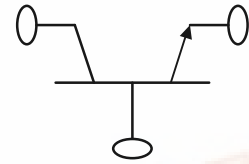
A Microsemi Company
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2N2222A DIE

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DIE SPECIFICATION

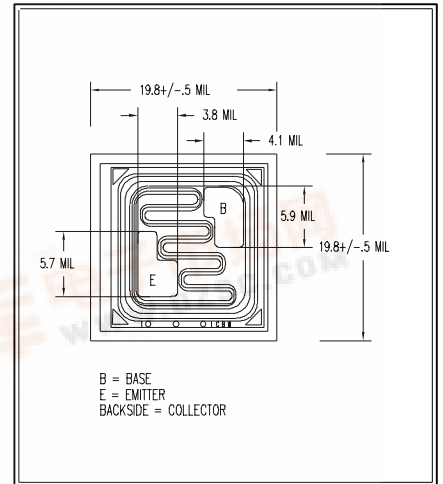
**SWITCHING TRANSISTOR
NPN SILICON**



FEATURES:

- ELECTRICAL PERFORMANCE I.A.W. MIL-PRF-19500/255
- AVAILABLE IN WAFER OR CHIP FORM FOR HYBRID APPLICATIONS
- GENERAL PURPOSE-HIGH SPEED SWITCHING APPLICATIONS
- LOW $V_{CE(sat)}$: .3V @ $I_C = 150 \text{ mAdc}$

PHYSICAL DIMENSIONS



Absolute Maximum Ratings:

| Symbol | Parameter | Limit | Unit |
|----------------|--|-------------|------|
| V_{ce} | Collector-Emitter Voltage | 50 | Vdc |
| V_{cb} | Collector-Base Voltage | 75 | Vdc |
| V_{eb} | Emitter-Base Voltage | 6.0 | Vdc |
| I_c | Collector Current- Continuous | 800 | mAdc |
| T_j, T_{stg} | Operating Junction & Storage Temperature Range | -65 to +200 | °C |

Packaging Options:
 W: Wafer (100% probed) U: Wafer (sample probed)
 D: Chip (Waffle Pack) B: Chip (Vial)
 V: Chip (Waffle Pack, 100% visually inspected) X: Other

Processing Options:
 Standard: Capable of JANTXV applications (No Suffix)
 Suffix C: Commercial
 Suffix S: Capable of S-Level equivalent applications

Metallization Options:
 Standard: Al Top / Au Backside (No Dash #)
 Dash 1: Al Top / TiPdAg Backside

ORDERING INFORMATION:
 PART #: 2N2222A__-_
 First Suffix Letter: Packaging Option
 Second Suffix Letter: Processing Option
 Dash #: Metallization Option



Electrical Characteristics @ $T_j = 25\text{ }^\circ\text{C}$

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-------------------------------------|---|--|-----|-----|---------|
| OFF CHARACTERISTICS | | | | | |
| V(BR)CBO | Breakdown Voltage, Collector to Base | Bias Cond. D, $I_C=10\mu\text{A}$ dc | 75 | | Vdc |
| V(BR)EBO | Breakdown Voltage, Emitter to Base | Bias Cond. D, $I_E=10\mu\text{A}$ dc | 6 | | Vdc |
| V(BR)CEO | Breakdown Voltage, Collector to Emitter | Bias Cond. D, $I_C=10\text{mA}$ dc, pulsed | 50 | | Vdc |
| ICES | Collector to Emitter Cutoff Current | Bias Cond. D, $V_{CE}=50\text{V}$ dc | | | 50 nA |
| ICBO1 | Collector to Base Cutoff Current | Bias Cond. D, $V_{CB}=60\text{V}$ dc | | | 10 nA |
| IEBO | Emitter to Base Cutoff Current | Bias Cond. D, $V_{EB}=4\text{V}$ dc | | | 10 nA |
| ON CHARACTERISTICS | | | | | |
| hFE1 | Forward-Current Transfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=0.1\text{mA}$ dc | 50 | | |
| hFE2 | Forward-Current Transfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=1.0\text{mA}$ dc | 75 | 325 | |
| hFE3 | Forward-Current Transfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=10\text{mA}$ dc | 100 | | |
| hFE4 | Forward-Current Transfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=150\text{mA}$ dc, pulsed | 100 | 300 | |
| hFE5 | Forward-Current Transfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=500\text{mA}$ dc, pulsed | 30 | | |
| VCE(sat)1 | Collector to Emitter Saturation Voltage | $I_C=150\text{mA}$ dc, $I_B=15\text{mA}$ dc, pulsed | | | 0.3 Vdc |
| VCE(sat)2 | Collector to Emitter Saturation Voltage | $I_C=500\text{mA}$ dc, $I_B=50\text{mA}$ dc, pulsed | | | 1 Vdc |
| VBE(sat)1 | Base to Emitter Saturation Voltage | $I_C=150\text{mA}$ dc, $I_B=15\text{mA}$ dc, pulsed | 0.6 | 1.2 | Vdc |
| VBE(sat)2 | Base to Emitter Saturation Voltage | $I_C=500\text{mA}$ dc, $I_B=50\text{mA}$ dc, pulsed | | | 2 Vdc |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| hfe | Short Circuit Forward Current Xfer Ratio | $V_{CE}=10\text{V}$ dc, $I_C=1\text{mA}$ dc, $f=1\text{kHz}$ | 50 | | |
| /hfe/ | Magnitude of Short Circuit Forward Current Transfer Ratio | $V_{CE}=20\text{V}$ dc, $I_C=50\text{mA}$ dc, $f=100\text{MHz}$ | 2.5 | | |
| Cobo | Output Capacitance | $V_{CB}=10\text{V}$ dc, $I_E=0$, $100\text{kHz} < f < 1\text{MHz}$ | | | 8 pF |
| Cibo | Input Capacitance | $V_{EB}=2.0\text{V}$ dc, $I_C=0$, $100\text{kHz} < f < 1\text{MHz}$ | | | 25 pF |
| SWITCHING CHARACTERISTICS | | | | | |
| ton | Saturated Turn-on Time | As defined in 19500/255 Figure 8 | | | 45 nS |
| toff | Saturated Turn-off Time | As defined in 19500/255 Figure 9 | | | 300 nS |